

Abstract: A new system for fission track (FT) dating with a high resolution monitor has been developed. FT age calibration constants (zeta-values) have been determined for the new system using five age standards of zircon. The external detector method was applied to internal (4π) surfaces and external (2π) surfaces of zircon (ED1 and ED2 methods, respectively). Thermal neutron irradiation was done using the Rotary Specimen Rack in TRIGA II reactor of St. Paul's University with NIST SRM-612 dosimeter glasses. The resulting overall weighted mean zeta values are 352 ± 3 for ED1 method and 334 ± 3 for ED2 method. A significant difference in the zeta values between the two methods is mainly attributed to different track counting efficiency between 4π and 2π surfaces of zircon. A comparison of zeta values among different system or laboratories revealed that difference of the zeta values is strongly influenced by track identification or track counting criteria for each researcher.

The Baba Tuff, a Miocene tuff in central Japan, was examined as a candidate of age standards for intercalibration among K-Ar, $^{40}\text{Ar}/^{39}\text{Ar}$, and FT dating methods.